

CLAIMS

1. Shiftable, multispeed reverse transmission comprising one input shaft (1), countershafts (2, 3, 4, 5, 6, 7), gears and/or idle gears non-rotatably connectable with the countershafts via shiftable clutches for gear and direction change being disposed on the countershafts (2, 3, 4, 5, 6, 7), and one output shaft (8), characterized in that the reduction ratios are generated by spur pinion stages and at least one shiftable planetary stage (P).

2. Transmission according to claim 1, characterized in that, depending on shifting states of the clutches and/or synchronizer units or dog clutches, two power flows can be produced which meet on the same fixed gear (107), said fixed gear not being situated upon the output shaft (8).

3. Transmission according to claim 2, characterized in that the shiftable planetary stage is located between the fixed gear (107) and the output shaft (8).

4. Transmission according to claim 3, characterized in that in each power flow up to the fixed gear (107) one clutch takes part.

5. Transmission according to any one of the preceding claims, characterized in that four countershaft (2, 4, 6, 7) upon the input shaft (1) one powershift clutch (KV) is situated by way of which one idle gear (115) can be non-torsionally connected with the input shaft (1), that upon the shaft (1) one fixed gear (116) is provided which is in constant mesh with one fixed gear (202) of the countershaft (2), that upon the countershaft (2) one powershift clutch (KR) is provided which loosely non-torsionally connects an idle gear (102) with the shaft (2), the idle gear (102) and the idle gear (115) being in constant mesh with a fixed gear (104) on the countershaft (4), that upon the countershaft (4) one idle gear (111) non-torsionally connectable via a clutch (K2) with the shaft (4) and one fixed gear (204) are provided, the idle gear (111) being in constant mesh with one fixed gear (106) situated upon the additional countershaft (6) and the fixed gear (204) being in constant mesh with an idle gear (113) situated upon the countershaft (6) and non-torsionally connectable with the shaft (6) via a clutch (K4), that the fixed gear (106) of the shaft (6) is in constant mesh with a

fixed gear (107) situated on the countershaft (07), there being provided upon the shaft (7) one idle gear (117) which is in constant mesh with a fixed gear (108) situated on the output shaft (8) that in power flow direction between the fixed gear (107) and the fixed gear (108) of the output shaft (8) a shiftable planetary stage (P) is situated whose sun gear is non-torsionally connectable with the shaft (7).

6. Transmission according to claim 5, characterized in that for engaging the planetary stage (P), one brake (B) is provided which connects the hollow gear (H) of the planetary stage (P) with the housing (G), and that one clutch (K) is provided which loosely interconnects two components of the planetary stage (P).

7. Transmission according to claim 6, characterized in that by the clutch (K) the sun gear can be connected with the hollow gear or the sun gear with the web, or the sun gear with the hollow gear and the web.

8. Transmission according to claim 6 or 7, characterized in that when the brake (B) is engaged and the clutch (K) open, the power is transmitted from the fixed gear (107) via the planetary stage (P) to the idle gear (117) and that when the brake (B) is open and the clutch (K) engaged, the power is transmitted from the fixed gear (107) to the idle gear (117) without a change of the ratio being transmitted.

9. Transmission according to claim 8, characterized in that it has four forward and four reverse gears and when the clutch (KV) or (KR) is engaged the first forward gear or reverse gear results by engaging the clutch (K2) and of the brake (B), the second forward gear or reverse gear by engaging the clutch (K4) and of the brake (B), the third forward gear or reverse gear by engaging the clutch (K2) and the clutch (K) the fourth forward gear or reverse gear by engaging the clutch (K4) and of the clutch (K).

10. Transmission according to claim 8, characterized in that two other countershafts (3, 5) are provided, that the countershaft (3) has two fixed gears (103, 203) and one idle gear (110) non-torsionally connectable with the shaft (3) via one clutch (K1) provided upon the shaft (3), the fixed gear (103) being in constant mesh with the idle gear (115) of the input shaft (1), that the

countershaft (5) has one fixed gear (105) which is in constant mesh with the idle gear (110) of the shaft (3) and has one idle gear (112) non-torsionally connectable with the shaft (5) via one clutch (K3) provided on the shaft (5), the idle gear (112) being in constant mesh with the fixed gear (203) of the shaft (3) and the fixed gear (105) being in constant mesh with the fixed gear (107) situated on the shaft (7), that upon the shaft (2) no shifting element (KR) is placed and that upon the input shaft (1) two synchronizer units or dogs (SV) and (SR) are situated instead of the clutch (KV).

11. Transmission according to claim 10, characterized in that it has eight forward and eight reverse gears, the first forward gear or reverse gear resulting while the synchronizer unit or dog respectively (SV) and (SR) is engaged by engaging the clutch (K1) and of the brake (B), the second forward gear or reverse gear by engaging the clutch (K2) and of the brake (B), the third forward gear or reverse gear by engaging the clutch (K3) and of the brake (B), the fourth forward gear or reverse gear by engaging the clutch (K4) and of the brake (B), the fifth forward gear or reverse gear by engaging the clutch (K1) and of the clutch (K), the sixth forward gear or reverse gear by engaging the clutch (K2) and of the clutch (K), the seventh forward gear or reverse gear by engaging the clutch (K3) and of the clutch (K) and the eighth forward gear or reverse gear by engaging the clutch (K4) and of the clutch (K).